

## HOST SHIFT OF *ECPANTHERIA DEFLORECTATA* (ARCTIIDAE) FROM AN ANGIOSPERM TO A LIVERWORT

KEVIN C. SPENCER, LARRY R. HOFFMAN AND DAVID S. SEIGLER

Department of Plant Biology, University of Illinois,  
Urbana, Illinois 61801

**ABSTRACT.** A population of *Ecpantheria deflorectata* Fabricius (Lepidoptera: Arctiidae) was discovered in W. Indiana feeding on *Conocephalum conicum* (Marchantiales: Marchantiaceae), a liverwort. The normal hosts of *Ecpantheria* in the study area are two species of *Plantago*, and the shift to *Conocephalum* has occurred despite major differences in host plant chemistry.

*Ecpantheria deflorectata* Fabricius is an arctid moth which has been reported to feed on a number of unrelated species in North America (Tietz, 1972). These include *Brassica oleracea* L. (Brassicaceae), *Helianthus decapetalus* L. (Asteraceae), *Robinia pseudocacacia* L. (Fabaceae), *Euphorbia heterophylla* L. and *Ricinus communis* L. (Euphorbiaceae), *Persea americana* Mill. (Lauraceae), *Phytolacca americana* L. (Phytolaccaceae), *Salix* sp. (Salicaceae), *Viola* sp. (Violaceae) and *Plantago rugellii* Dec. and *P. lanceolata* L. (Plantaginaceae).

In the Portland Arch Nature Preserve, Fountain Co., Indiana, we found that *Plantago rugellii* and *P. lanceolata* serve as the major host plants for *E. deflorectata*.

We observed, however, that a number of larvae were grazing exclusively on *Conocephalum conicum* L. (Hepaticae), especially in the fall of the year. This liverwort forms large mats on sheer rockfaces and is very abundant at Portland Arch. Few other lepidopterans are known to feed on bryophytes (see Tuskes & Smith, 1984), and not many are known from other lower plants (e.g., *Euptychia* on a lycopsid—Singer et al., 1971). Several larvae of various instars were reared on *C. conicum* in the laboratory and pupated and emerged normally.

We consider this host shift to be of interest because of the great difference in secondary chemistry between *C. conicum* and the angiosperm hosts. The chemistry of *Conocephalum* has been reviewed (Markham & Porter, 1978; Spencer, 1979) and the plant has been found to contain a large array of mono- and sesquiterpenoids, including up to 0.6% dry weight (+) - bornyl acetate, a monoterpene existing in opposite chirality to that found in higher plants (Asakawa et al., 1976). Some liverwort terpenoids have been shown to inhibit feeding in Lepidoptera (Wada & Munakata, 1971). The major chemical constituents of *Plantago* are iridoid glycosides (Jensen et al., 1975).

We speculate that some larvae have shifted from *Plantago* to *Co-*

*nocephalum* primarily due to the close proximity of infested individuals of *Plantago* to *Conocephalum* covered rocks and to the similar texture of the two plants.

As we have observed a population of *Ecpantheria* to be present on *Conocephalum* consistently for over 10 years, and given the unique chemistry of hepatics which has probably kept lepidopteran herbivores in general from utilizing them as host plants, we feel that this host shift represents a major event in the population biology of *Ecpantheria*. This may prove to be a useful system for studying population differentiation across chemical barriers and may represent an incipient speciation event.

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